VGLA COE Organizer
Science 3

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K.1 The student will conduct investigations in which		
a)		basic properties of objects are identified by direct observation;
b)		observations are made from multiple positions to achieve different perspectives;
c)		objects are described both
		pictorially and
		verbally;
d)		a set of objects is sequenced according to size;
e)		a set of objects is separated into two groups based on a single physical attribute;
f)		nonstandard units are used to measure common objects;
g)		a question is developed from one or more observations;
h)		picture graphs are constructed using 10 or fewer units;
i)		an unseen member in a sequence of objects is predicted; and
j)		unusual or unexpected results in an activity are recognized.

VGLA COE Organizer
Science 3

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K.2 Students will investigate and understand that humans have senses that allow one to seek, find, take in, and react or respond to information in order to learn about one's surroundings. Key concepts include		
a)	five senses and corresponding sensing organs	
		taste - tongue,
		touch – skin,
		smell – nose,
		hearing – ears,
		sight – eyes; and
b)	sensory descriptors	
		sweet,
		sour,
		bitter,
		salty,
		rough/smooth,
		hard/soft,
		cold-warm-hot,
		loud/soft,
		high/low,
		bright/dull

VGLA COE Organizer
Science 3

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1.1 The student will conduct investigations in which		
a)		differences in physical properties are observed using the senses;
b)		simple tools are used to enhance observations;
c)		objects or events are classified and arranged according to attributes or properties;
d)		observations and data are communicated orally and with
		simple graphs,
		pictures,
		written statements, and
		numbers;
e)		length is measured using standard and nonstandard units,
		mass is measured using standard and nonstandard units,
		volume is measured using standard and nonstandard units;
f)		predictions are based on patterns of observation rather than random guesses;
g)		simple experiments are conducted to answer questions; and
h)		inferences are made about familiar objects and events and
		conclusions are drawn about familiar objects and events.

VGLA COE Organizer
Science 3

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2.1 The student will conduct investigations in which		
a)		observation is differentiated from personal interpretation, and
		conclusions are drawn based on observations;
b)		observations are repeated to ensure accuracy;
c)		two or more attributes are used to classify items;
d)		conditions that influence a change are defined;
e)		measurements are made in metric units (centimeters, meters, liters, degrees Celsius, grams, kilograms)
		length,
		volume,
		mass,
		temperature,
		measurements are made in standard English units (inches, feet, yards, cups, pints, quarts, gallons, degrees Fahrenheit, ounces, pounds)
		length,
		volume,
		mass, and
		temperature;
f)		pictures are constructed using numbered axes and
		bar graphs are constructed using numbered axes;
g)		unexpected or unusual quantitative data are recognized; and
h)		simple physical models are constructed.

VGLA COE Organizer
Science 3

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3.1 The student will plan and conduct investigations in which		
a)		predictions are made and
		observations are made;
b)		objects with similar characteristics are classified into at least
		two sets and
		two subsets;
c)		questions are developed to formulate hypotheses;
d)		volume is measured to the nearest milliliter and
		volume is measured to the nearest liter;
e)		length is measured to the nearest centimeter;
f)		mass is measured to the nearest gram;
g)		data are
		gathered
		charted, and
		graphed (line plot, picture graph, and bar graph);
h)		temperature is measured to the nearest degree Celsius;
i)		time is measured to the nearest minute;
j)		inferences are made and
		conclusions are drawn;
k)		natural events are sequenced chronologically.

VGLA COE Organizer
Science 3

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K.3 The student will investigate and understand that magnets have an effect on some materials, make some things move without touching them, and have useful applications. Key concepts include		
a)		attraction/non-attraction,
		push/pull,
		attract/repel,
		metal/nonmetal; and
b)		useful applications (refrigerator magnet, can opener, magnetized screwdriver, and magnetic games).

VGLA COE Organizer
Science 3

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K.4 The student will investigate and understand that the position, motion, and physical properties of an object can be described. Key concepts include		
a)		colors (red, orange, yellow, green, blue, purple), white, and black;
b)		shapes (circle, triangle, square, and rectangle) and
		forms (flexible/stiff, straight/curved);
c)		textures (rough/smooth) and
		feel (hard/soft);
d)		relative size and weight (big/little, large/small, heavy/light, wide/thin, long/short); and
e)		position (over/under, in/out, above/below, left/right) and
		speed (fast/slow).

VGLA COE Organizer
Science 3

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K.5 The student will investigate and understand that water flows and has properties that can be observed and tested. Key concepts include		
a)		water occurs in different states (solid, liquid, gas);
b)		the natural flow of water is downhill; and
c)		some materials float in water, while others sink.

VGLA COE Organizer
Science 3

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1.2 The student will investigate and understand that moving objects exhibit different kinds of motion. Key concepts include		
a)		objects may have
		straight motions,
		circular motions, and
		back-and-forth motions;
b)		objects may vibrate and produce sound;
c)		pushes or pulls can change the movement of an object; and
d)		the motion of objects may be observed in
		toys and
		playground activities .

VGLA COE Organizer
Science 3

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1.3 The student will investigate and understand how different common materials interact with water. Key concepts include		
a)		some liquids will separate when mixed with water, but others will not;
b)		some common solids will dissolve in water, but others will not; and
c)		some substances will dissolve more readily in hot water than in cold water.

VGLA COE Organizer
Science 3

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2.2 The student will investigate and understand that natural and artificial magnets have certain characteristics and attract specific types of metals. Key concepts include		
a)		magnetism,
		iron,
		magnetic/nonmagnetic,
		poles,
		attract/repel; and
b)		important applications of magnetism including the magnetic compass.

VGLA COE Organizer
Science 3

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2.3 The student will investigate and understand basic properties of solids, liquids, and gases. Key concepts include		
a)		mass and
		volume; and
b)		processes involved with changes in matter from one state to another
		condensation,
		evaporation,
		melting, and
		freezing;

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Science 3

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3.2 The student will investigate and understand simple machines and their uses. Key concepts include		
a)		types of simple machines
		lever,
		screw,
		pulley,
		wheel and axle,
		inclined plane, and
		wedge;
b)		how simple machines function;
c)		compound machines (scissors, wheelbarrow, and bicycle); and
d)		examples of simple machines found in the
		school,
		home, and
		work environment
		examples of compound machines found in the
		school,
		home, and
		work environment.

VGLA COE Organizer
Science 3

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3.3 The student will investigate and understand that objects are made of materials that can be described by their physical properties. Key concepts include		
a)		objects are made of one or more materials;
b)		materials are composed of parts that are too small to be seen without magnification; and
c)		physical properties remain the same as the material is reduced in size.

VGLA COE Organizer
Science 3

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K.6 The student will investigate and understand basic needs and life processes of plants and animals. Key concepts include		
		living things
		change as they grow, and
		they need food, water, and air to survive;
b)		plants and animals live and die (go through a life cycle); and
c)		offspring of plants and animals are similar but not identical to their parents and to one another.

VGLA COE Organizer
Science 3

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1.4 The student will investigate and understand that plants have life needs and functional parts and can be classified according to certain characteristics. Key concepts include		
a)		needs (food, air, water, light, and a place to grow);
b)		parts (seeds, roots, stems, leaves, blossoms, fruits); and
c)		characteristics (edible/nonedible, flowering/nonflowering, evergreen/deciduous).

VGLA COE Organizer
Science 3

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1.5 The student will investigate and understand that animals, including people, have life needs and specific physical characteristics and can be classified according to certain characteristics. Key concepts include		
a)		life needs (air, food, water, and a suitable place to live);
b)		physical characteristics (body coverings, body shape, appendages, and methods of movement); and
c)		other characteristics (wild/tame, water homes/land homes).

VGLA COE Organizer
Science 3

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2.4 The student will investigate and understand that plants and animals undergo a series of orderly changes in their life cycles. Key concepts include		
a)		some animals (frogs and butterflies) undergo distinct stages during their lives, while others generally resemble their parents; and
b)		flowering plants undergo many changes, from the formation of the flower to the development of the fruit.

VGLA COE Organizer
Science 3

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2.5 The student will investigate and understand that living things are part of a system. Key concepts include		
a)		living organisms are interdependent with their living and nonliving surroundings;
b)		habitats change over time due to many influences.

VGLA COE Organizer
Science 3

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2.7 The student will investigate and understand that weather and seasonal changes affect plants, animals, and their surrounding. Key concept include		
a)	effects on growth and behavior of living things	
		migration,
		hibernation,
		camouflage,
		adaptation,
		dormancy;

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Science 3

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2.8 The student will investigate and understand that plants produce oxygen and food, are a source of useful products, and provide benefits in nature. Key concepts include			
a)		important plant products (fiber, cotton, oil, spices, lumber, rubber, medicines, and paper);	
b)		the availability of plant products affects the development of a geographic area: and	
c)		plants	
			provide homes and food for many animals and
			prevent soil from washing away.

VGLA COE Organizer
Science 3

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3.4 The student will investigate and understand that behavioral and physical adaptations allow animals to respond to life needs. Key concepts include		
a)	methods of	
		gathering and storing food,
		finding shelter,
		defending themselves, and
		rearing young; and
b)		hibernation,
		migration,
		camouflage,
		mimicry,
		instinct, and
		learned behavior.

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Science 3

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3.5 The student will investigate and understand relationships among organisms in aquatic and terrestrial food chains. Key concepts include		
a)		producer,
		consumer,
		decomposer;
b)		herbivore,
		carnivore,
		omnivore; and
c)		predator and prey.

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Science 3

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3.6 The student will investigate and understand that environments support a diversity of plants and animals that share limited resources. Key concepts include		
a)		water-related environments
		pond,
		marshland,
		swamp,
		stream,
		river, and
		ocean;
b)		dry-land environments
		desert,
		grassland,
		rain forest, and
		forest; and
c)		population and community.

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3.10 The student will investigate and understand that natural events and human influences can affect the survival of species. Key concepts include		
a)		the interdependency of plants and animals.

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Science 3

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K.7 The student will investigate and understand that shadows occur when light is blocked by an object. Key concepts include		
a)		shadows occur in nature when sunlight is blocked by an object; and
b)		shadows can be produced by blocking artificial light sources

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Science 3

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K.8 The student will investigate and understand simple patterns in his/her daily life. Key concepts include		
a)		weather observations;
b)		the shapes and forms of many common natural objects including
		seeds,
		cones, and
		leaves;
c)		animal and plant growth;
d)		home and school routines.

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Science 3

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K.9 The student will investigate and understand that change occurs over time and rates may be fast or slow. Key concepts include		
a)		natural and human-made things may change over time; and
b)		changes can be noted and measured.

VGLA COE Organizer
Science 3

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K.10 The student will investigate and understand that materials can be reused, recycled, and conserved. Key concepts include		
a)		materials and objects can be used over and over again;
b)		everyday materials can be recycled; and
c)		water and energy conservation at home and in school helps preserve resources for future use.

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Science 3

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1.6 The student will investigate and understand the basic relationships between the sun and the Earth. Key concepts include		
a)		the sun is the source of heat and light that warms the land, air, and water, and
b)		night and day are caused by the rotation of the Earth.

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Science 3

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1.7 The student will investigate and understand the relationship of seasonal change and weather to the activities and life processes of plants and animals. Key concepts include how temperature, light, and precipitation brings about changes in		
a)		plants (growth, budding, falling leaves, and wilting);
b)		animals (behaviors, hibernation, migration, body covering, and habitat); and
c)		people (dress, recreation, and work).

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Science 3

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1.8 The student will investigate and understand that natural resources are limited. Key concepts include		
a)		identification of natural resources
		plants and animals,
		water,
		air,
		land,
		minerals,
		forest, and
		soil;
b)		factors that affect air and water quality; and
c)		recycling,
		reusing, and
		reducing consumption of natural resources.

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2.6 The student will investigate and understand basic types, changes, and patterns of weather. Key concepts include		
a)		temperature,
		wind,
		precipitation,
		drought,
		flood, and
		storms; and
b)		the uses and importance of measuring and recording weather data.

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2.7 The student will investigate and understand that weather and seasonal changes affect plants, animals, and their surrounding. Key concepts include		
b)		weathering and erosion of the land surface.

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Science 3

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3.7 The student will investigate and understand the major components of soil, its origin, and importance to plants and animals including humans. Key concepts include		
a)		soil provides the support and nutrients necessary for plant growth;
b)		topsoil is a natural product of subsoil and bedrock;
c)		components of soils include
		rock,
		clay,
		silt,
		sand, and
		humus;
d)		soil is a natural resource and should be conserved.

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3.8 The student will investigate and understand basic patterns and cycles occurring in nature. Key concepts include		
a)		patterns of natural events
		day and night,
		seasonal changes,
		phases of the moon, and
		tides;
b)		animal life cycles and
		plant life cycles.

VGLA COE Organizer
Science 3

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3.9 The student will investigate and understand the water cycle and its relationship to life on Earth. Key concepts include		
a)		the energy from the sun drives the water cycle;
b)		processes involved in the water cycle
		evaporation,
		condensation,
		precipitation;
c)		water is essential for living things;
d)		water supply,
		water conservation.

VGLA COE Organizer
Science 3

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3.10 The student will investigate and understand that natural events and human influences can affect the survival of species. Key concepts include		
b)		the effects of human activity on the quality of
		air,
		water, and
		habitat;
c)		the effects of
		fire,
		flood,
		disease, and
		erosion on organisms;
d)		conservation and resource renewal.

VGLA COE Organizer
Science 3

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3.11 The student will investigate and understand different sources of energy. Key concepts include		
a)		the sun's ability to produce
		light
		heat energy;
b)		sources of energy (sunlight, water, wind);
c)		fossil fuels (coal, oil, natural gas) and
		wood; and
d)		renewable and
		nonrenewable energy resources.